

AMENDMENTS TO THE CLAIMS

1. (Original) An improved process for preparing a crosslinked article of manufacture comprising the steps
 - (a) melt processing a crosslinkable polymeric composition comprising
 - (1) a free-radical crosslinkable polymer,
 - (2) a free-radical inducing species, and
 - (3) a crosslinking-temperature-profile modifier,at a melt processing temperature greater than the nominal melt processing temperature of a combination of the free-radical crosslinkable polymer and the free-radical inducing species;
 - (b) forming an article of manufacture from the crosslinkable polymeric composition; and
 - (c) crosslinking the crosslinkable polymeric composition at the nominal crosslinking temperature as a formed article of manufacture.
 2. (Original) The improved process of Claim 1 wherein the free-radical crosslinkable polymer being hydrocarbon-based.

 3. (Original) The improved process of Claim 1 wherein the free-radical crosslinkable polymer is selected from the group consisting of ethylene/propylene/diene monomers, ethylene/propylene rubbers, ethylene/alpha-olefin copolymers, ethylene homopolymers, ethylene/unsaturated ester copolymers, ethylene/styrene interpolymers, halogenated polyethylene, propylene copolymers, natural rubber, styrene/butadiene rubber, styrene/butadiene/styrene block copolymers, styrene/ethylene/butadiene/styrene copolymers, polybutadiene rubber, butyl rubber, chloroprene rubber, chlorosulfonated polyethylene rubber, ethylene/diene copolymer, and nitrile rubber, and blends thereof.

 4. (Original) The improved process of Claim 3 wherein the free-radical crosslinkable polymer being a propylene polymer and the crosslinking temperature profile modifier suppresses chain scission of the propylene polymer.

 5. (Original) The improved process of Claim 1 wherein the free-radical inducing species being selected from the group consisting of organic peroxides, Azo free radical initiators, bicumene, oxygen, and air.

6. (Original) The improved process of Claim 1 wherein the crosslinking temperature profile modifier being a free radical inhibitor.

7. (Original) The improved process of Claim 6 wherein the free radical inhibitor being selected from the group consisting of (i) hindered amine-derived stable organic free radicals, (ii) iniferters, (iii) organometallic compounds, (iv) aryl azooxy radical, and (v) nitroso compounds.

8. (Original) The improved process of Claim 7 wherein the free radical inhibitor being a hindered amine-derived stable organic free radical selected from the group consisting of 2,2,6,6,-tetramethyl piperidinyl oxy (TEMPO) and derivatives thereof.

9. (Original) The improved process of Claim 8 wherein the stable organic free radical being a derivative of 2,2,6,6,-tetramethyl piperidinyl oxy selected from the group consisting of bis-TEMPOs, oxo-TEMPO, 4-hydroxy-TEMPO, esters of 4-hydroxy-TEMPO, polymer-bound TEMPO, PROXYL, DOXYL, di-tertiary butyl N oxyl, dimethyl diphenylpyrrolidine-1-oxyl, 4 phosphonoxy TEMPO, and metal complexes with TEMPO.

10. (Original) The improved process of Claim 7 wherein the free radical inhibitor being an iniferter selected from the group consisting of tetraethyl thiuram disulfide, benzyl NN diethyldithiocarbamate, dithiocarbamates, polythiocarbamates, and S benzyl dithiocarbamate.

11. (Original) The improved process of Claim 1 wherein the crosslinkable polymeric composition achieves the same degree of cure or a higher degree of cure than the combination would achieve in the absence of the crosslinking-temperature-profile modifier.

12. (Original) The improved process of Claim 1 wherein the crosslinkable polymeric composition further comprises a cure booster.

13. (Original) The improved process of Claim 1 wherein the free-radical crosslinkable polymeric composition further comprises a catalyst for increasing free-radical formation, selected from the group consisting of tertiary amines, cobalt naphthenate, manganese naphthenate, vanadium pentoxide, and quaternary ammonium salt.

14. (Original) An improved process for preparing a crosslinked article of manufacture comprising melt processing a crosslinkable polymeric composition comprising

- (1) a free-radical crosslinkable polymer,
- (2) a free-radical inducing species, and
- (3) a crosslinking-temperature-profile modifier,

at a melt processing temperature greater than the nominal melt processing temperature of a combination of the free-radical crosslinkable polymer and the free-radical inducing species.

15. (Canceled)

16. (Original) An improved process for preparing a crosslinked article of manufacture comprising the steps

- (a) melt processing a crosslinkable polymeric composition comprising
 - (1) a free-radical crosslinkable polymer,
 - (2) a free-radical inducing species, and
 - (3) a crosslinking-temperature-profile modifier,

wherein

- (i) in the absence of the crosslinking-temperature-profile modifier, a combination of the free-radical crosslinkable polymer and the free-radical inducing species has a nominal processing rate and
 - (ii) the crosslinking-temperature-profile modifier permits running the process at least about 5 percent faster than the nominal processing rate, and

at a melt processing temperature greater than the nominal melt processing temperature of a combination of the free-radical crosslinkable polymer and the free-radical inducing species;

- (b) forming an article of manufacture from the crosslinkable polymeric composition; and
- (c) crosslinking the crosslinkable polymeric composition as a formed article of manufacture.

17. (Original) The improved process of Claim 16 wherein the crosslinking step occurs at a temperature greater than the nominal crosslinking temperature.

Claims 18 - 23 (Canceled)

24. (Original) An improved process for preparing a crosslinked article of manufacture comprising melt processing a crosslinkable polymeric composition comprising

- (1) a free-radical crosslinkable polymer,
- (2) a free-radical inducing species, and
- (3) a crosslinking-temperature-profile modifier wherein TS1 being an indication of premature crosslinking of a combination of the free-radical crosslinkable polymer and the free-radical inducing species,

at a melt processing temperature greater than the nominal melt processing temperature while maintaining TS1 at least equal to the TS1 of a combination of the free-radical crosslinkable polymer and the free-radical inducing species at the nominal melt processing temperature.

25. (Currently amended) The improved process of Claim 2324 wherein TS1 of the combination being at least 20 minutes.

26. (Currently amended) The improved process of Claim 2324 wherein, at the melt processing temperature, the processing rate being at least about 5 percent faster than the nominal processing rate.

27. (Currently amended) An improved process for preparing an expanded, crosslinked article of manufacture comprising the steps of

- (a) injecting at an injection temperature an expandable, free-radical crosslinkable polymeric composition ~~of~~ into a mold at a mold temperature, wherein the expandable, free-radical crosslinkable polymeric composition comprises
 - (A1) a free-radical crosslinkable polymer;
 - (A2) a free-radical inducing species;
 - (A3) a crosslinking-temperature-profile modifier; and
 - (A4) a blowing agent selected from the group consisting of chemical blowing agents and physical blowing agents;
- (b) heating the expandable, free-radical crosslinkable polymeric composition for a period of time to a crosslinking temperature sufficient to expand and crosslink the expandable, crosslinkable polymeric composition;
- (c) removing the expandable, free-radical crosslinkable polymeric composition from the mold; and

(d) expanding and crosslinking the expandable, free-radical crosslinkable polymeric composition to an expanded, crosslinked article of manufacture.

Claims 28-41 (Canceled)